MULTI-AXIS HAND-ARM VIBRATION TESTING & SIMULATION AT THE NATIONAL INSTITUTE OF INDUSTRIAL HEALTH, KAWASAKI, JAPAN

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Introduction

Hand-Arm Vibration Syndrome (HAVS) was identified as early as 1918 in Bedford, Indiana in the U.S. Since then much research work has been done around the world in the areas of medical, epidemiological, engineering and legal aspects of HAVS. In Japan, much of the pioneering work in this field has been performed by Dr. Setsuo Maeda and his staff at the National Institute of Industrial Health (NIIH) in Kawasaki. Most recently, reports of work done by this group and by Dr. Ren Dong[1] of NIOSH in the U.S., as well as many other suppliers and Japanese practitioners were presented at the 13th Japan Group Meeting on Human Response to Vibration held in Osaka[2] during August 3-5, 2005.

Patient grasping test handle at NIIH, Japan

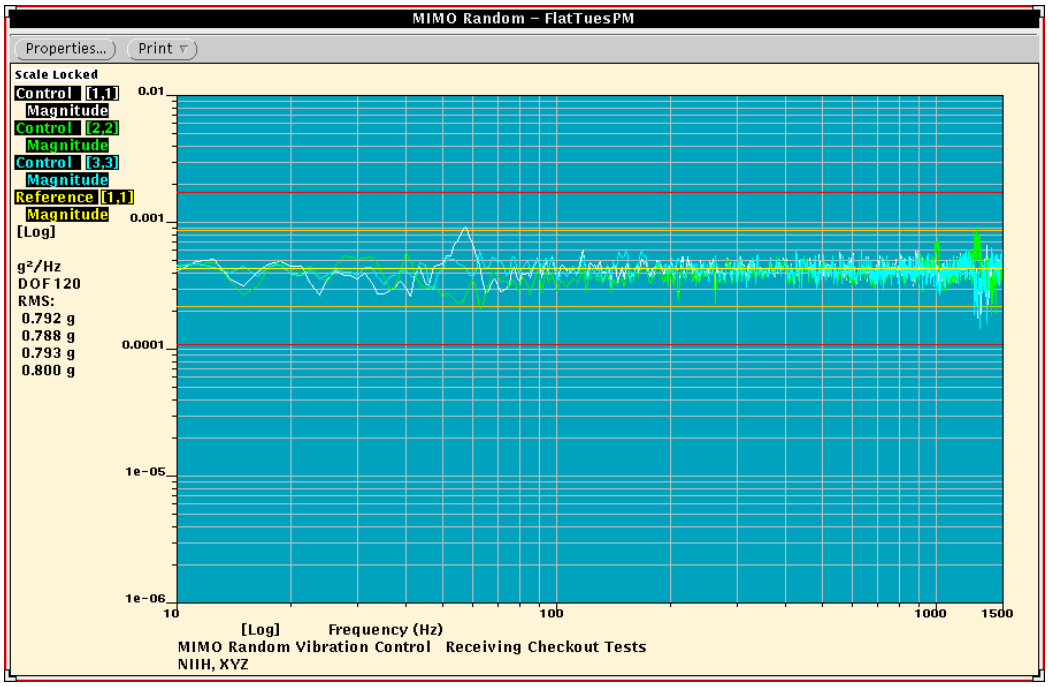
The laboratory at NIIH has been at the forefront of much of the testing technology and instrumentation verification involved in the latest HAVS research which is taking place. An example of this is the recently installed 3-axis vibration simulator in the NIIH laboratory. What follows is a brief description of this system and some results obtained to date.

Methods

Specific methods of measurement and analysis were under development as this abstract was prepared. The presentation may include actual patient response data if it is available at that time.

Results

Results of simultaneous X, Y, Z controlled excitation, like this example, are given.



X, Y, Z Responses controlled from 10 to 1,500 Hz

Discussion

Development is continuing on a modified special handle with embedded Force and Acceleration transducers to understand fully the patient HAVS responses.

References

1. Maeda, S, and Dong, R.G. (2004). Measurement of hand-transmitted vibration exposure. Proceedings of the 10th International Conference on Hand-Arm Vibration, Las Vegas, NV, USA.
2. Keller, T (2005). Some aspects of multi-shaker/multi-axis MIMO. 13th Japan Group Meeting on Human Response to Vibration; Osaka, Japan, 3-5 August, 2005 (JGHRV)